



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/734,108

12/15/2003

Chun Pyo Hong

1751-347

4863

6449

7590

06/09/2006

ROTHWELL, FIGG, ERNST & MANBECK, P.C.
1425 K STREET, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER

LIN, ING HOUR

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/734,108

Applicant(s)

HONG, CHUN PYO

Examiner

Ing-Hour Lin

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al in view of Adachi et al.

Shibata et al (col. 8, lines 27+) teach the claimed apparatus for manufacturing a semi-solid metallic slurry having solid phase ratio in the range 10-60% (col. 9, lines 65+) , comprising a sleeve 2 having two open ends, through one end the molten metal is loaded into the sleeve; a temperature control (fluid passage 2b); a stirring unit of electromagnetic field 6 and a shutter unit of a removable plunger 5 for closing or opening the other end. Shibata et al fail to teach the use of applying an electromagnetic field (EM field) in the sleeve before the completion of loading the molten metal to the vessel.

However, Adachi et al (col. 3, lines 56+) teach the use of applying EM field in the range of 50Hz to 1kHz during loading the molten metal to the sleeve (holding vessel) for generating homogeneous crystal nuclei and disengaging the EM field when the pouring ends (col. 74, lines 1+) for the purpose of controlling the fine-grained equiaxed slurry (non-dendritic casting) and reducing slurry cycling time. It would have been obvious to one having ordinary skill in the art to provide Shibata et al the use of applying EM field during loading the molten metal to the

Art Unit: 1725

sleeve (holding vessel) as taught by Adachi et al in order to control the fine-grained equiaxed slurry (non-dendritic casting) in the sleeve.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al in view of Adachi et al and further in view of Doutre et al.

Shibata et al in view of Adachi et al fail to teach the use of stopper for the shutter unit.

However, Doutre et al (col. 7, lines 8+ and Figs. 5-6) teach the use of a shutter unit of a removable stopper (closure) 56 for closing or opening the other end of the sleeve for the purpose of keeping or removing the semi-solid metallic slurry in the sleeve. It would have been obvious to one having ordinary skill in the art to provide Shibata et al in view of Adachi et al the use of a stopper as taught by Doutre et al in order to effectively control the amount of semi-solid metallic slurry in the sleeve.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al in view of Adachi et al and further in view of Nakao et al.

Shibata et al in view of Adachi et al fail to teach the use of a pressing unit and a plunger.

However, Nakao et al (col. 8, lines 58+) teach the use of a plunger 30 as shutter and a pressing unit 49 as presser for the purpose of controlling the shape of billet 48 in the sleeve (cylinder) 25. It would have been obvious to one having ordinary skill in the art to provide Shibata et al in view of Adachi et al the use of a pressing unit and a plunger as taught by Nakao in order to control the slurry in the sleeve.

Art Unit: 1725

Response to Arguments

5. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

I-H-L

I.-H. Lin

5-30-06

Len Tran
primary Examiner
Au 1725
5/29/06